

1 II. AMENDMENTS TO THE CLAIMS

2 1. (Currently amended) A yaw, pitch and roll articulated assembly (1) for a multi-unit
3 vehicle comprised of:

4 a. a pitch assembly (100) with pitch means (130); said pitch assembly (100)
5 having pitch assembly interconnection means to a first vehicle unit (10); pitch means
6 (130) allowing a pitch relationship between the first vehicle unit (10) and a second
7 vehicle unit (20);

8 b. a yaw assembly (200) with yaw means; said yaw assembly (200) having pitch-
9 yaw assembly interconnection means of the pitch assembly (100) and the yaw assembly
10 (200); the yaw assembly (200) having yaw-roll assembly interconnection means; yaw
11 means allowing a yaw relationship between the first vehicle unit (10) and the second
12 vehicle unit (20);

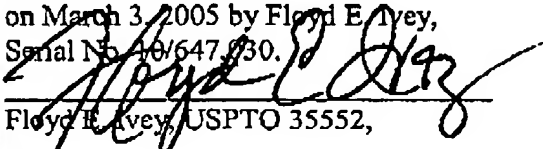
13 c. a roll assembly (300) with roll means; said roll assembly (300) having yaw-roll
14 assembly interconnection the yaw assembly (200) and the roll assembly (300) and having
15 roll interconnection means to the second vehicle unit (20); roll means allowing a roll
16 relationship between the first vehicle unit (10) and the second vehicle unit (20);[.]

17 d. the pitch assembly interconnection means to a first vehicle unit (10) comprised
18 of a first pitch interconnection plate (110) affixed by interconnection affixing means to
19 the first vehicle unit (10);

20 e. the first pitch interconnection plate (110) is pitch rotatably affixed by pitch
21 interconnection affixing means (130) to a pitch assembly attachment plate (120);

22 f. the pitch assembly attachment plate (120) is immovably connected, by affixing
23 means, to at least one first yaw assembly plate (210);

24 g. the pitch-yaw assembly interconnection means of the pitch assembly (100) and
25 the yaw assembly (200) rotatably interconnecting the pitch assembly (100) with the yaw

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1 assembly (200):

2 h. the roll assembly (300) having a yaw-roll interface plate (310); the yaw-roll
3 interface plate (310) fixedly connected, by plate affixing means, to at least one second
4 yaw assembly plate (220); the yaw-roll assembly interconnection means yaw rotatably
5 interconnecting the yaw assembly (200) with the roll assembly (300); the yaw-roll
6 interface plate (310) interconnected by roll means with a second roll interconnection plate
7 (320); the second roll interconnection plate (320) affixed by plate affixing means to the
8 second vehicle unit (20);

9 i. yaw interconnection means interconnecting the at least one first yaw assembly
10 plate (210) and the at least one second yaw assembly plate (220) proximal the respective
11 extension edge and second extension edge; yaw interconnection means receiving yaw
12 power means to urge the at least one first yaw assembly plate (210) to yaw rotate with
13 respect to the at least one second assembly plate (220);

14 j. yaw power means comprised of motor means (400).

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17 2. (Cancelled)

18 3. (Currently amended) A yaw, pitch and roll articulated assembly of claim 2 further
19 comprising:

20 a. the pitch assembly attachment plate (120) having an assembly plate first side
21 (122), an assembly plate second side (123), an assembly plate top (126) and an assembly
22 plate bottom (127);

23 b. the first pitch interconnection plate (110) affixed by rotatable pitch
24 interconnection affixing means (130) to the pitch assembly attachment plate (120) at the
25 assembly plate front side (124) proximal the assembly plate bottom (127) or at the
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1 assembly plate bottom (127);

2 c. the at least one first yaw assembly plate (210) having a first yaw assembly plate
3 edge (212), an extension edge (213), a first yaw assembly plate top (214) and a first yaw
4 assembly plate bottom (215); the at least one first yaw assembly plate edge (212)
5 immovably affixed by edge affixing means at the assembly plate second side (123); the
6 extension edge (213) distal from the first yaw assembly plate edge (212); the at least first
7 yaw assembly plate (210) extending from the assembly plate second side (123) outwardly
8 from the assembly plate second side (123);

9 d. the at least one second yaw assembly plate (220) having a second yaw assembly
10 plate edge (222), a second extension edge (223), a second yaw assembly plate top (224)
11 and a second yaw assembly plate bottom (225); the at least one second yaw assembly
12 plate edge immovably affixed by edge affixing means at the yaw-roll interface plate (310)
13 at a yaw surface (314); the second extension edge (223) distal from the at least second
14 yaw assembly plate edge (222); the at least second yaw assembly plate (220) extending
15 from the yaw surface (314) outwardly from the yaw surface (314); the yaw-roll interface
16 plate (310) having a yaw-roll interface plate top (311) and a yaw-roll interface plate
17 bottom (312).___[:]

18 ~~_____ e. yaw interconnection means interconnecting the at least one first yaw assembly~~
19 ~~plate (210) and the at least one second yaw assembly plate (220) proximal the respective~~
20 ~~extension edge and second extension edge; yaw interconnection means receiving yaw~~
21 ~~power means to urge the at least one first yaw assembly plate (210) to yaw rotate with~~
22 ~~respect to the at least one second assembly plate (220).~~

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24 4. (Original) A yaw, pitch and roll articulated assembly of claim 3 further comprising:

25 a. the first yaw assembly plate edge (212) immovably affixed by edge affixing
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1 means at the assembly plate second side (123) intermediate the assembly plate top (126)
2 and the assembly plate bottom (127) or proximal the assembly plate bottom (127); yaw
3 interconnection means interconnecting the at least one first yaw assembly plate (210) and
4 the at least one second yaw assembly plate (220) proximal the respective extension edge
5 (213) and second extension edge (223) comprised of at least one first aperture (217), from
6 the first yaw assembly plate top (214) to the first yaw assembly plate bottom (215),
7 proximal the at least one first yaw assembly plate extension edge (213), and at least one
8 second aperture (227) from the second yaw assembly plate top (224) to the second yaw
9 assembly plate bottom (225), proximal the second extension edge (223) wherein said at
10 least one first aperture (217) and said at least one second aperture (227) are aligned to
11 receive rotatable shaft or shaft interrelated with gear interconnecting means; said shaft or
12 shaft interrelated with gear interconnecting means receiving yaw power means to urge the
13 rotation of the at least one first yaw assembly plate (210) relative to the at least one
14 second yaw assembly plate (220);

15 b. the first pitch interconnection plate (110) affixed by rotatable pitch
16 interconnection affixing means (130) to the assembly plate first side (122) intermediate
17 the assembly plate top (126) and the assembly plate bottom (127) or proximal the
18 assembly plate bottom (127);

19 c. the first pitch interconnection plate (110), the pitch assembly attachment plate
20 (120), the at least one first yaw assembly plate (210), the at least one second yaw assembly
21 plate (220), the yaw-roll interface plate (310), and the second roll interconnection plate
22 (320) are substantially planar;

23 d. rotatable pitch interconnection affixing means (130) comprised of hinge means
24 (130); roll means comprised of first roll interconnecting means (330) received by second
25 roll interconnecting means (340).

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2 5. (Currently amended) A yaw, pitch and roll articulated assembly of claim 4 further
3 comprising:

4 a. rotatable yaw power means comprised of a motor means (400) driving a motor
5 shaft (410); the motor means (400) stationarily fixed by stationary fixing means at either
6 the first yaw assembly plate top (214), the first yaw assembly plate bottom (215), the
7 second yaw assembly plate top (224) or the second yaw assembly plate bottom (225);
8 where the motor means (400) is affixed to the at least one first yaw assembly plate (210)
9 the motor shaft (410), either directly or by gear means torque connected to the shaft or
10 shaft interrelated with gear interconnection means, key notch or gear interconnected to the
11 at least one second yaw assembly plate (220); where the motor means (400) is affixed to
12 the at least one second yaw assembly plate (220) and the motor shaft (410), either
13 directly or by gear means connected by torque means, connected to the shaft or shaft
14 interrelated with gear interconnection means; including by key notch means or gear
15 means interconnected to the at least one first yaw assembly plate (210);

16 b. first roll interconnecting means (330) comprised of threaded means received by
17 second roll interconnecting means (340) comprised of complementary receiving threaded
18 means.

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20 6. (Currently amended) A yaw, pitch and roll articulated assembly of claim 5 further
21 comprising:

22 a. motor means (400) yaw power to the shaft (410), key (420) and notch (425) or
23 to shaft (410) interrelated with gear means (430) interconnection at the at least one first
24 aperture (217) or at the at least one second aperture (227) urges the respective at least one
25 first yaw assembly plate (210) to yaw rotate relative to the at least one second yaw
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1 assembly plate (220) responsive to power means signals received by the motor means
2 (400) at signal input means ((440)); motor means comprised of electric, pneumatic or
3 hydraulic power transmitted by steering means;

4 b. first roll interconnecting means (330) comprised of threaded means received by
5 second roll interconnecting means (340) comprised of complementary receiving threaded
6 means; first roll interconnecting means (330) immovably affixed to second roll
7 interconnection plate (320) at a roll side (321); the second roll interconnection plate (320)
8 affixed by immovable plate affixing means to the second vehicle (20) at a roll-vehicle
9 side (322)

10
11 7. (Original) A yaw, pitch and roll articulated assembly of claim 3 further comprising:

12 a. the at least one first yaw assembly plate (210) comprised of at least at least one
13 first yaw assembly plate(210) and at least one first top assembly plate (211);

14 b. the at least one first yaw assembly plate (210) having a first yaw assembly plate
15 edge (212), an extension edge (213), a first yaw assembly plate top (214) and a first yaw
16 assembly plate bottom (215); the at least one first yaw assembly plate edge (212)
17 immovably affixed by edge affixing means at the assembly plate second side (123); the
18 extension edge (213) distal from the first yaw assembly plate edge (212); the at least first
19 yaw assembly plate (210) extending from the assembly plate second side (123) outwardly
20 from the assembly plate second side (123);

21 c. the at least one top yaw assembly plate (211) having a first yaw assembly plate
22 edge (232), an extension edge (233), a top yaw assembly plate top (234) and a top yaw
23 assembly plate bottom (235); the at least one top yaw assembly plate edge (232)
24 immovably affixed by edge affixing means at the assembly plate second side (123); the
25 extension edge (233) distal from the top yaw assembly plate edge (232); the at least one
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1 top yaw assembly plate (211) extending from the assembly plate second side (123)
2 outwardly from the assembly plate second side (123);

3 d. the pitch assembly attachment plate (120) is immovably connected, by
4 immovable affixing means, to the at least one first yaw assembly plate (210) proximal the
5 assembly plate bottom (127) and the at least one first top assembly plate (211) proximal
6 the assembly plate top (126);

7 e. the at least one second yaw assembly plate (220) comprised of at least at least
8 one second yaw assembly plate (220) and at least one second top assembly plate (221);

9 f. the at least one second yaw assembly plate (220) having a second yaw assembly
10 plate edge (222), an extension edge (223), a second yaw assembly plate top (224) and a
11 second yaw assembly plate bottom (225); the at least one second yaw assembly plate
12 edge (222) immovably affixed by edge affixing means at the yaw-roll interface plate
13 (310) at the yaw surface (314); the extension edge (223) distal from the second yaw
14 assembly plate edge (222); the at least second yaw assembly plate (211) extending from
15 the yaw-roll interface plate (310) outwardly from the yaw-roll interface plate (310);

16 g. the at least one second top assembly plate (221) having a second top yaw
17 assembly plate edge (242), an extension edge (243), a second yaw top assembly plate top
18 (244) and a second yaw top assembly plate bottom (245); the at least one second yaw top
19 assembly plate edge (242) immovably affixed by edge affixing means at the yaw-roll
20 interface plate (310) at the yaw surface (314); the extension edge (243) distal from the
21 second top assembly plate edge (242); the at least second top yaw assembly plate (221)
22 extending from the yaw-roll interface plate (310) outwardly from the yaw-roll interface
23 plate (310);

24 h. the at least one second yaw assembly plate (220) is immovably affixed by
25 immovable affixing means, at the yaw-roll interface plate (310) at the yaw surface (314)

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1 proximal the yaw-roll inter face plate bottom (312) and the at least one second top
2 assembly plate (221) is immovably affixed by immovable affixing means at the yaw-roll
3 interface plate (310) at the yaw surface (314) proximal the yaw-roll interface plate top
4 (311);

5 i. yaw interconnection means interconnecting the at least one first yaw assembly
6 plate (210) and the at least one second yaw assembly plate (220) by aligned apertures,
7 proximal the extension edges (213) and (233), receiving shaft interconnection means
8 (500) or yaw power by motor means (400) and motor shaft means (410) or motor
9 shaft means (410) with gear means (430);

10 j. yaw interconnection means interconnecting the at least one top yaw assembly
11 plate (211) and the at least one second top yaw assembly plate (221) by aligned apertures,
12 proximal the extension edges (233) and (243), receiving shaft interconnection means
13 (500) or yaw power by motor means (400) and motor shaft means (410) or motor shaft
14 means (410) with gear means (430).

15
16 8. (Previously Amended) A yaw, pitch and roll articulated assembly of claim 7 further
17 comprising:

18 a. shaft interconnection means (500) comprised of nut and bolt (500) connection
19 means; yaw power by motor means (400) comprised of electric, pneumatic or hydraulic
20 motor means with drive means;

21 b. the first pitch interconnection plate (110), the pitch assembly attachment plate
22 (120), the at least one first yaw assembly plate (210), the at least one top yaw assembly
23 plate (211), the at least one second yaw assembly plate (220), the at least one top second
24 yaw assembly plate (221) the yaw-roll interface plate (310), and the second roll
25 interconnection plate (320) are substantially planar;

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1 c. rotatable pitch interconnection affixing means (130) comprised of hinge means
2 (130); roll means comprised of first roll interconnecting means (330) received by second
3 roll interconnecting means (340).

4
5 9. (Currently Amended) A yaw, pitch and roll articulated assembly of claim 8 further
6 comprising:

7 a. rotatable yaw power means comprised of a motor driving a motor shaft; the
8 motor stationarily fixed by stationary fixing means at either the first yaw assembly plate
9 top, the first yaw assembly plate bottom, the second yaw assembly plate top or the second
10 yaw assembly plate bottom; drive means comprised of shaft (410), key (420) and notch
11 (425) or shaft (410) and gear (430) drive means; the motor shaft either directly or by gear
12 means torque connected to the shaft or shaft interrelated with gear interconnection;

13 b. first roll interconnecting means (330) comprised of threaded means received by
14 second roll interconnecting means (340) comprised of complementary receiving threaded
15 means; first roll interconnecting means (330) immovably affixed to second roll
16 interconnection plate (320) at a roll side (321); the second roll interconnection plate (320)
17 affixed by immovable plate affixing means to the second vehicle (20) at a roll-vehicle
18 side (322) .

19
20 10. (Original) A yaw, pitch and roll articulated assembly of claim 9 further comprising:

21 a. shaft or shaft interrelated with gear interconnection is key means interrelated at
22 the at least one first aperture or at the at least one second aperture by shaft or aperture key
23 received by shaft or aperture notch; transmitting yaw power to the motor.

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